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DEPLOYMENT OF TOTAL QUALITY MANAGEMENT IN
NAVY PUBLIC WORKS CENTERS

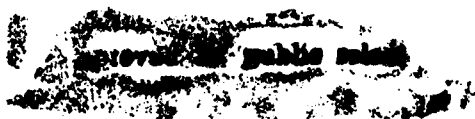**DTIC**
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DEPLOYMENT OF TOTAL QUALITY MANAGEMENT IN
NAVY PUBLIC WORKS CENTERS

by

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REPORT

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Chapter 1. Introduction

The United States Federal Government employs approximately five million people which makes it bigger "than the first seventeen of the Fortune 500 companies combined" [23]. Civilian employees of the government number three million or three percent of all civilian employees in the United States [30]. These employees are entrusted to perform the business of government: provide service and information, enforce laws, create and implement public and foreign policy, and provide for the national defense. Together, they spend more than 1.3 trillion dollars every year [23]. The quality and motivation of this work force is important to their ability to effectively and economically perform their duties to the electorate. In my opinion, they are mostly responsible, talented and dedicated people who want to do a good job. Too often, however, inefficient systems have frustrated their best efforts, destroyed their creativity and sapped their energy, making effective performance impossible [13].

Like their private sector counterparts, the federal government's executive leaders have realized that their industrial-era bureaucracy is being strangled by its own regulations. Highly stratified levels of bureaucracy are preventing workers from reaching their potential, agencies from providing the best service possible, and are costing the taxpayers more than necessary [26].

To help rid itself of these under-performing systems, the federal government has turned to the philosophy of Total Quality Management, "a strategic, integrated management system for achieving customer satisfaction," to make government work more effectively [33]. On September 7, 1993, President Clinton unveiled the National Performance Review, a detailed outline of how the federal government can reform and revitalize itself using the principles of Total Quality Management. President Clinton has indicated his commitment to taking the steps outlined and has directed implementation by departments.

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Of special interest to the author is the application of Total Quality Management principles to federal facilities maintenance, specifically Navy Public Works Centers. To develop this interest, the following literature review was conducted. The first objective of this literature review was to outline the historical development of federal productivity initiatives and the adoption of Total Quality Management by the federal government. The second objective was to define Total Quality Management, as I understand it, and to discuss research in human behavior that supports its use. The third objective of the review was to discuss the application of Total Quality Management principles and to provide suggestions for implementing these principles using the Naval Facilities Engineering Command's Navy Public Works Center Company concept.

The resultant paper is organized to meet these objectives as follows. In Chapters 2 and 3 a brief overview of recent productivity improvement initiatives in the federal government is presented, and the difficulty of implementing change in bureaucratic organizations is discussed. Chapter 4 is a review of human factors research which indicates that Total Quality Management can be successfully used to improve productivity in the federal public works environment. Current Navy Public Works Center operations are described in Chapter 5. Chapter 6 suggests modifications to the existing organizational structures, functions, and culture of Navy Public Works Centers based on the principles of Total Quality Management along with the perceived benefits of these changes. Finally, Chapter 7 offers key conclusions and recommendations.

Chapter 2. Selected Federal Productivity Improvement Initiatives

2.1 Introduction

In the private sector, it is easy to recognize the benefits of a productive work force. Productivity permits better salaries and wages, keeps the nation competitive, provides satisfaction for employees, and improves company profits [2]. Overall, increasing productivity means a higher standard of living. Likewise, governments must effectively produce the services that support businesses and citizens in their efforts, while providing a healthy workplace that will attract bright people to government service.

2.2 Establishment of Interest in Productivity

The federal government's earliest interest in productivity was in the nation's industrial sector. As early as 1898, the Commissioner of Labor Statistics studied the "role of productivity in relation to economic growth and in relation to wages and prices" [27]. Through the 1920's, research and data collection was focused on technological change. Then, through World War II, the Bureau of Labor Statistics studied labor displacement, maximum utilization of labor, and inflation [27].

In the 1950's, effort was concentrated on developing and analyzing trends. In 1959, the Joint Financial Management Improvement Program was born out of the joint effort between the General Accounting Office, the Department of the Treasury, and the Bureau of Budget which was originally founded to coordinate the financial management activities of all three agencies. "In 1966 the Civil Service Commission was invited to join the Joint Financial Management Improvement Program to provide leadership in personnel matters" [27]. This union quickly became the leading player in public sector productivity research.

2.3 Early Productivity Initiatives in the Federal Government

Amid concerns of slower economic growth in the late 1960's and higher inflation in the early 1970's, the importance of the role that the federal sector plays in the national economy began to become more obvious and Congress became more interested in "measuring productivity in the Federal Government" [27]. Since then, the United States Federal Government has initiated many programs with the specific goal of increasing the productivity of federal workers. Some of the programs are applicable to every agency in the executive branch of government and others were developed by individual agencies. Though the earliest programs do not reveal a wholesale approach to productivity improvement, each effort does seem to advance towards that end.

The Civil Service Reform Act, passed in 1978, made several advances on the productivity front. The legislation called for the Civil Service Commission to be absorbed by the Office of Personnel Management. Under this new arrangement, they developed several models designed to measure productivity increases for specific management actions like training, and even in areas where productivity is not easily measured. Though these models received little attention, the Office of Personnel Management's focus on productivity received significant attention and resulted in the creation of the National Productivity Council. Its mission was to improve the rate of productivity growth in the federal work force. This new group's most significant accomplishment was to encourage executive agencies to evaluate employees, in part, on their productivity and to provide the opportunity for recognition of employees who make productivity improvements.

In late 1979, the Manager's Handbook was published to explain the changes resulting from the Civil Service Reform Act. The handbook outlines a manager's responsibility to undertake new initiatives aimed at increasing work force productivity and offers rewards for improvements in "programs, systems, procedures and processes" [34]. It also recognizes that when analyzing productivity initiatives, managers should not only establish a baseline and reliable

measures by which to evaluate changes, but also use an organized approach of employee participation to develop and implement the changes. Additionally, it provides a modern definition of productivity. Productivity is described as "organizational performance - not only efficiency (output per employee) but also effectiveness (how far the output satisfied program objectives)" [27].

The Management Improvement Program, established in 1979, was to provide "guidance improvement initiatives designed to increase the efficiency and effectiveness of program operations" [27]. Its goal was to "seek improvement on a continuous basis so that federal management will reflect the most progressive practices of both public and business, and thus result in improved service to the public" [27]. However, program managers were uncertain of the basic techniques needed to implement the program and provide useful information to agencies. Lack of resources and agency support quickly rendered the program useless.

The year 1979 also yielded a revised Performance of Commercial Activities policy. The policy reconfirmed the federal government's desire to rely on the private sector for performance of some commercial activities, such as facilities maintenance. A method for comparing the cost of government operations with private sector proposals for the same work was developed, and many industrial-type activities were under severe pressure to make the comparison. For many reasons: lack of adequate scope definition, lack of complete government cost data, and resistance by local federal workers' unions, the process was cumbersome and difficult. However, the concept of competition and the adoption of private sector practices remains.

2.4 Adoption of the Total Quality Management Philosophy

In the mid-1980's, the Reagan administration invited corporate chief executive officers to the White House to discuss productivity improvement in the federal government. These businessmen suggested that instead of focusing solely on productivity, the federal government should focus on quality. They suggested

that this change in perspective offered many benefits including the productivity gains in which the administration was interested. On their recommendation, the Federal Quality Institute was established. Starting up in June 1988, "the Institute was staffed with four people and no budget" [25]. Its purpose was to increase awareness and help match federal agencies with private sector Total Quality Management suppliers that could best serve their needs.

In 1990, the Federal Quality Institute [25] defined its mission and role.

> The mission of the Federal Quality Institute (FQI) is to promote and facilitate the implementation of total quality management (TQM) throughout the federal government in order to improve the quality, timeliness, and efficiency of federal services to the American people.
> To accomplish its mission, the Federal Quality Institute will serve as the catalyst for TQM in government in five major areas: coordination; training; technical assistance; information, resources, and referrals; and model projects. In carrying out this role, FQI will collaborate with the Office of Management and Budget, the Office of Personnel Management, and the President's Council on Management Improvement toward the common goal of establishing TQM in federal agencies.

By 1993, the Institute's staff had increased by almost ten fold, and though its original mission was still in place, services had been expanded. One of the Institute's most recent projects was providing Vice President Al Gore's National Performance Review team with case history information on implementation of quality programs in the federal government as they began work on "reinventing government" [24].

2.5 Commitment to Quality and the National Performance Review

To sustain productivity improvement requires top level support, creation of an atmosphere conducive to change, and improved management capabilities [17].

In early March 1993, President Bill Clinton said, "Our goal is to make the entire federal government both less expensive and more efficient, and to move the culture of our national bureaucracy away from complacency and entitlement toward initiative and empowerment" [24]. To date, the most significant step in this move was taken on September 7, 1993, when President Clinton unveiled the National Performance Review, a detailed outline on how the federal government can reform and revitalize itself using the principles of Total Quality Management. Vice President Al Gore, who headed the review effort, stated its purpose simply. "The National Performance Review focused primarily on how government should work, not on what it should do. Our job was to improve performance in areas where policy makers had already decided government should play a role" [26].

To that end, the National Performance Review Team developed four key principles around which to build their suggestions for improvement: "cutting red tape, putting customers first, empowering employees to get results, and cutting back to basics - producing better government for less" [26]. They provided step-by-step actions to be taken by the President and executive agencies to begin the process of change and to encourage the growth of quality as a natural part of government operations.

The National Performance Review Team, in developing their recommendations for the President, were able to draw upon the experience of several executive agencies, including the Department of the Navy, who had already begun to adopt the guiding principles of Total Quality Management.

Chapter 3. Development of a New Philosophy in the Department of the Navy

3.1 Evolution of Organizational Structure in the Department of Defense: Bureaucratic to Custodial

During the 1960's under the leadership of Secretary of Defense Robert McNamara, the Department of Defense became the nation's largest, most centralized bureaucracy. Relying on his experiences at Ford Motor Company, Secretary McNamara re-organized his department and patterned it after the industrial-era corporations that had prospered using the theories of standardization and centralization since the end of World War II [21].

This type of organization is characterized by the Bureaucracy Model developed by the German sociologist, Max Weber [7]. In a bureaucracy:

- the business is continuous,
- the business is conducted according to a set of rules,
- each official is assigned a specific area over which his authority extends subject to clearly defined conditions,
- responsibilities and authority are part of a hierarchy,
- officials and other employees do not own the resources with which they deal but can be held accountable for them,
- offices cannot be sold or inherited,
- official business is conducted on the basis of written documents.

This type of organization is often chosen for public sector application because it offers many advantages: continuity, discretion, unity, speed, knowledge of the files, strict subordination, and reduction of material and personnel costs [7]. But in the case of the Department of Defense, "authority gravitated upward, and those [in] the field felt their ability to make decisions slip away" [21]. Communication stagnated, decisions lagged, and new regulations were generated faster than they could be implemented.

With its strict standard operating procedures, the organization began to become more bureaucrat-centered, and internal efficiency became extremely important. Creative people were stifled and forced into custodial positions with responsibility for maintaining the status quo. Only the minor changes needed to achieve perfection of the routine could be made. Processes and assignments became inflexible as the original purpose of the organization took its place behind standard operating procedure. The efficiency of the organization was based on predictability, or how well future events conform to past experience and the procedures [7].

As the passing years brought rising costs and a changing world order, it became evident that this type of organization was not flexible enough to allow the Department of Defense to meet its dramatically changing responsibilities. Navy leadership began to look for ways to regain a focus on mission.

3.2 Development of Total Quality Leadership in the United States Navy

In 1979, the Chief of Naval Material sponsored a research effort at the Navy Personnel Research and Development Center focused on determining whether Japanese-style management methods that were being applied in private companies would have applicability in the Department of the Navy. Though initial skepticism about use of these methods in a bureaucratic organization was strong, interest in pursuing the quality philosophy persisted [20]. "From 1984 to 1986 the Department of the Navy conducted a top down review of industrially-funded activities to identify productivity problems and to make recommendations for improvement based on" their research findings. These recommendations were to become the basis of the Navy's action plan [27].

The Department of the Navy's 1987 Total Performance/Productivity Improvement Action Plan [27] reviewed specific shore activities to identify productivity problems and make recommendations for improvement based on application of private sector industrial management and control techniques.

Objectives of the plan were to: 1) exceed the President's goal of a 20% increase in productivity by 1992, 2) respond to measurement and reporting requirements of the Office of Management and Budget and the Department of Defense, and 3) to foster an environment for continuous improvement based on a management philosophy encouraging participation and positive change to remove impediments and improve total performance.

Elements necessary to promote cultural change have been identified as management commitment, support and involvement at all levels, an environment of trust and support encouraging superior performance, and a recognition system providing adequate reward. Emphasis has been placed on continuous improvement in quality, timeliness, and cost; improved customer satisfaction; reduction of organizations having missions and functions not directly supportive of streamlining requirements; improved work force motivation and rewards; participative management; functional integration; ADP systems integration; decision support systems, automation, and mechanization; and streamlining all processes including acquisition.

What the Total Performance/Productivity Improvement Action Plan prescribed was Total Quality Management. Naval leadership realized, however, that implementation of Total Quality Management in the Department of the Navy would be difficult simply because of the bureaucratic nature of the organization [20]. After all, the Total Quality Management philosophy was developed with industry in mind. It rests solidly on the concepts of competition, profit, and the free will of customers to motivate business leaders. Government managers, by contrast, deal in a world of monopolies, political interests, and public scrutiny, and collect their income through taxation. Under these circumstances, a manager is more likely to be motivated by internal pressures and the fear of making mistakes than by a desire to satisfy customers [21]. It is within the purpose and operation of the organization itself that lie the real impediments to improvement in public

sector productivity. This is the reason that some are skeptical about the effective use of Total Quality Management techniques in government.

3.3 Impediments to Productivity Improvement

Government exists to provide a mechanism for making decisions, for delivering services that benefit all people, and for solving collective problems. In most cases, it has become a monopoly required to serve all of a community's varying interests in an open and equal manner regardless of individual demand for services or ability to pay [21]. Hence, it moves cautiously and has little incentive to change for fear of public outrage. In an environment like this, business-as-usual is good, and detailed standard procedures are a must to ensure that every rule is obeyed. Government leaders realize that "scandals are front-page news, while routine failure is ignored" so organizational procedures become "repetitive, standardized, error-prone, and customer-hostile" [26,23].

Providing service in this arena is already difficult, but it is further compounded by public precept. The federal government "is expected to treat and serve its customers equally" [23]. Generally, this is done through one service which will fit a variety of customer needs. "However, customers expect personalized service, especially when problems arise. Deciding when personalized service is appropriate and balancing this with government's need for equity and minimal cost adds complexity to service delivery planning" [23].

Regardless of the extent of service provided, a customer's perception of the service provided is also dependent upon the person-to-person experience he or she has at the time of delivery. The perception of quality is created in a "moment of truth" by the service provider when the service is delivered [1]. "The service, once provided, cannot be inspected or recalled" and is "beyond the immediate influence of management" [23]. Bound by many regulations, it is, at times, even beyond the immediate influence of the service provider. This aspect of service may be especially difficult to provide in governmental agencies that have the responsibility

for ensuring compliance with laws and regulations which a customer may view negatively.

The basic workings of government exacerbate these problems. "The inevitable changes in political balance can cause an agency's mission to reflect such changes" [23]. New leaders have agendas to fulfill and must deliver some visible "result" to appear effective. Traditionally, expansion of control or budget increases symbolize effectiveness [8]. Tenures are short, competition scarce, and the cost of services are obscure, so governmental organizations lumber along. In reality, with little performance data or background knowledge, executive leadership does not have the tools they need to make effective productivity improvements. In the constant flux of leadership, long range strategic planning becomes a low priority [8].

One would then turn to the civil service community to provide continuity. However, civil service policies and practices, in trying to protect against abuses, tend to inhibit productivity improvements through personnel ceilings, salary and grade controls, mandated future productivity increases, and promotions based on seniority rather than performance-based criteria [17]. The policies generally produce low productivity and low employee morale. If they choose to stay, even the most enthusiastic new employees eventually become disillusioned and hardened to exhortations to work harder. The most highly skilled workers, however, leave in disproportionate numbers for work in which they will be rewarded for their efforts [8]. A 1988 General Accounting Office study reports, "The Department of Defense studied the quality of science and engineering personnel who left the Department, compared to those who remained, finding that separation rates of those who had scored above 650 on the mathematics part of the Scholastic Aptitude Test (at high school graduation) were about 50% higher than those of persons who scored below the level" [30].

3.4 Findings of the Total Performance/Productivity Improvement Action Plan

These obstacles were apparent to Navy leadership who were looking for ways to improve the organization's performance after some twenty years of entrenched practice. Discussed earlier, the Navy's 1987 Total Performance/Productivity Improvement Action Plan [27] listed the following:

- encouragement of the status quo by the system and tradition,
- bureaucratic barriers to effective management,
- need for top level champions,
- lack of a cohesive and compelling long range vision and plan,
- diffused focus on identifying important aspects and measuring success,
- lack of incentives to improve productivity.

The list forms an antithesis to the 14 Points for quality management which Dr. W. Edwards Deming insisted are necessary to "create an organizational environment for continuous, unending improvement" [14]. Navy leadership recognized the barriers to implementing Total Quality Management. Conversely, the could also see the advantages these principles brought and began to understand why they worked so effectively.

Chapter 4. Factors Indicating Successful Use of Total Quality Management

4.1 Introduction

Former President George Bush said, "The improvement of quality in products and the improvement of quality in service - these are national priorities as never before" [37]. Quality has become the yardstick by which public and private institutions alike are judged, and the basis on which they compete. Hence, in a global marketplace, it is also the measure of a country's economic strength and world position. Whatever the difficulty associated with implementing change in a large bureaucratic organization, quality, demonstrated through customer satisfaction, employee participation, and lower costs, must become the goal of governmental service providers. Total Quality Management now offers the most promising route for reaching that goal.

4.2 Total Quality Management Defined

Total Quality Management (TQM) is "a complete and all-encompassing process in which an entity dedicates itself to production of quality products through management of entity assets" [9]. It is a "strategic, integrated management system for achieving customer satisfaction. It involves all managers and employees and uses quantitative methods to improve continuously an organization's processes" [33].

A TQM organization must have four basic elements. Most importantly, implementation of TQM requires top management support. A significant shift in daily business practice is difficult and training is expensive. Top management will not see results immediately and they may face a lot of resistance to change, especially from middle management. Top management must, therefore, be completely committed to the ideals of TQM before beginning. Adoption of the philosophy should "be undertaken only as a good-faith response to a need for change" [22].

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Customer focus is the second element. Placing emphasis on customer needs demands that an organization demonstrate expertise in and understanding of its market and customers, or core competency. This understanding is necessary for an organization to develop a process that will provide goods or services that meet or exceed the needs of their customers under the conditions of the market place [9]. Under these circumstances, "no [process] change is made unless it can be illustrated as a move towards increased customer satisfaction" [14]. Interestingly, this customer focus is no less applicable to internal customers and the work environment.

The third element is the TQM organizational building block. It is the team. A team is "a collection of people who must rely on group collaboration to experience success and goal achievement" [22]. Teams can be formed between and within all levels and functional groups of an organization. Most commonly there are executive level teams, middle management teams, and work force teams. From these generally come problem solving teams, functional teams, and project teams.

Aside from top management commitment, adequate training for these teams is probably the most important aspect of successful implementation of TQM. In addition to their occupational proficiency training, team members must be trained in quality awareness, in team skills, in specialized quality improvement techniques, and in a slew of skills or "tools" including: problem solving, statistical analysis, and planning and management [22]. Teams also require the support and guidance of management to make lasting process improvement.

The final basic aspect of a TQM organization is continual improvement. Continual improvement may have been best described by Joseph Juran as an upward spiral. The spiral begins when a customer has a need for a product. Next, the product is developed, manufactured, and marketed. Customer feedback about the product generates further product development by the producer which generates more feedback from the customer. Through improved products and

changing needs, the producer and the customer propel each other along the path toward a quality product, one that meets the customers' needs [9].

These four basic elements constitute the heart of an organization built around and dedicated to the TQM philosophy.

4.3 Deming's 14 Points

Over his lifetime, Dr. Edwards Deming, "the guru of the total quality movement," "formulated a total of 14 management mandates which he believes constitutes just such a dedicated management philosophy" [9,14].

> Dr. Deming's 14 points include a recommendation for organizations to redefine their purpose for existing, to move away from short term profit and toward innovation and improvement. (Point 1); a mandate to institute a new quality philosophy, one not tolerant of poor quality (Point 2); a realignment of processes to prevent defects rather than an inspection procedure to delete mistakes after they've been make (Point 3); a recommendation that businesses consider quality, rather that just price, as a primary determiner for purchasing materials and sub-units (Point 4); a reminder to never accept any level of quality as "good enough" (Point 5); the declaration that workers require adequate training in order to perform quality work (Point 6); a mandate for management to "lead" rather than use negative disincentives (Point 7); a reminder that management must create a non-threatening environment that supports inquiry by employees and increases the likelihood that employees won't perform poor quality work because they are afraid to ask for help (Point 8); a suggestion to create an organizational environment that increases cooperation and communication among departments and divisions (Point 9); a reminder that cheer leader-like management doesn't really motivate workers (Point 10); a mandate to eliminate numerical quotas for production, since they tend to create an orientation on

quantity rather than quality (Point 11); a reminder that employees want to perform quality work, and that it's management's job to reduce barriers to quality (Point 12); the fact that managers and workers need training and education in the concepts of quality to perform quality work (Point 13); and a statement that management must create a plan to institute and continue the organization's pursuit of quality [Point 14].

4.4 Exploitation of Human Behavior

One of the reasons TQM has been so effective as a management philosophy is because it takes advantage of human nature. Many of the findings of research in management and behavioral science are reflected in the Fourteen Points of TQM.

For example, Points Three, Eleven, Twelve, and Fourteen are supported by the work of Rensis Likert, the "Father of Participative Management," and Frederick Herzberg [3]. Likert asserts that the quality of work depends on worker attitude, and therefore, top management should focus on human needs to improve productivity and quality. In his research, Herzberg took the notion one step further and "suggest[ed] that the factors involved in producing job satisfaction (and motivation) are separate and distinct from the factors that lead to job dissatisfaction" [11]. He went on to say that the "motivator factors that are intrinsic to the job are: achievement, recognition for achievement, the work itself, responsibility, and growth or advancement. The dissatisfaction ... factors that are extrinsic to the job include: company policy, supervision, interpersonal relationships, working conditions, salary, status, and security." In a TQM organization, management is responsible for removing the barriers or dissatisfiers and using the satisfiers to create both worker satisfaction and a quality product.

Studying the utilization of human resource management concepts as applied to the construction industry, John D. Borcherding demonstrated the

relevance of Deming's first and ninth points. Borcherding found that lack of trust, communication, planning, and teamwork between project members usually resulted in poor quality performance and dissatisfied workers [3]. He suggests that "dissatisfaction may become particularly acute when, often through lack of engineering support and planning from management, the job goes sour" [6]. Borcherding also found that the most dissatisfied workmen were on large construction projects that were managed through "a deep hierarchy with authority for decisions near the top and far removed from the foreman" [5,6].

Relying on the principles of TQM, Borcherding suggests a reorganization strategy for "breaking down barriers" between project participants. Borcherding proposes that the "reorganization should be based upon the division of the entire project into different work areas, each managed by groups in the large company or by smaller construction companies" [14,6]. He believes that "coordination, rather than decision-making at the top, is preferable to the greater specialization and less flexible decision-making of the single large hierarchical structure" [6]. By investing in the worker and moving decision-making responsibility closer to the front lines, management creates an organization in which workers can analyze and act on new situations quickly and effectively [29]. This returns the challenge and responsibility for a "particular phase of the work" to the crew-level [3]. These small groups of employees have a constancy of purpose. They control their work which fulfills their individual needs for self-esteem and achievement [6]. Breaking down barriers, opening communication, and distributing decision-making authority also help to drive fear from the workplace and encourage leadership at all levels of the organization.

4.5 Exploitation of Group Behavior

Research, again in the construction industry, by Craig S. Hazeltine indicated the importance of the small groups Borcherding recommended, or what TQM calls "teams". Hazeltine found that "crew relations seem to be a source of

high job satisfaction for both workers and foremen" and suggests that upper management foster "social relationships on the job" as a motivational tool [10].

The study of groups and group norms supports the recommendations made by Hazeltine and Borcherding. Group theory alleges that people tend to like others whose ideas, attitudes, and opinions are similar to their own. They will voluntarily form groups and will share experiences as a group. A new member's reaction to an experience soon after joining the group may vary widely from that of other group members. However, the longer a member remains in the group, the more likely his reaction will become similar to that of other group members. This phenomenon is called convergence and is the basis for the adoption of group norms [2].

Group norms are uniformity of attitude, opinion, or feelings shared by a group which regulates group member behavior. A group cannot exist without norms to coordinate member interaction within the group. Therefore, group norms and the attitudes that flow from them are very important to group productivity. Group members intuitively realize that through deviation from the status quo, they risk criticism, isolation or even ostracism. Each member's individual social need for acceptance is what keeps group norms in place even if the norm has become outmoded [2].

It is management's responsibility to recognize these human needs and to capture the potential that groups of workers hold. In his writings, William G. Torpey proposes a strategy for changing norms, which he calls cultural change. Torpey says that there are four basic elements required to produce cultural change: management commitment, support and involvement at all levels, an environment of trust and support encouraging superior performance, and a recognition system providing adequate rewards [27]. He says management should place emphasis on: continuous improvement in quality, timeliness, and cost; improved customer satisfaction; reduction of organizations having missions and functions not directly supportive of streamlining requirements; improved work force motivation and

rewards; automatic data processing systems integration; decision support systems, automation and mechanization; and streamlining processes including acquisition [12]. Torpey provides upper management with the recipe for success which is very similar to the principles of TQM.

4.6 Department of the Navy Commitment

TQM recognizes the need for a normative system that promotes productivity and shared commitment, and supports current product requirements [2]. It provides an environment conducive to cultural change and evolving group norms. Implementation of TQM creates the type of environment and culture that Naval leadership went looking for in 1979--flexible, mission-oriented, and innovative. Weighing the barriers to change against the benefits of change, the Department of the Navy committed itself to the principles of TQM in 1987. This commitment to continuous improvement was demonstrated through the Productivity Improvement Guiding Principles signed in 1987 by the Secretary of the Navy, the Chief of Naval Operations, and the Commandant of the Marine Corps. The Secretary of Defense endorsed the principles of Total Quality Management in 1988 and coined the Department of Defense adaptation, Total Quality Leadership [20].

Each major claimant in the Department of the Navy tailored its TQM implementation strategy to its special mission, products, and customers. As an example, the TQM strategy of the Naval Facilities Engineering Command is outlined in the following chapter.

Chapter 5. Naval Facilities Engineering Command Total Quality Management Strategy and Navy Public Works Center Organization

5.1 Naval Facilities Engineering Command Mission

The mission of the Naval Facilities Engineering Command is to serve as the Navy's expert for: facilities, public works, environment ashore, and Seabees [18].

5.2 Naval Facilities Engineering Command TQM Strategy

The Naval Facilities Engineering Command recognized the need for a quality-based management strategy, which is called "Total Quality Leadership" by the Navy, and produced their first strategic plan in 1990. Senior leaders began planning process changes with hopes of achieving "continuous, incremental improvement for [customers and employees] in all product and service areas while making the Naval Facilities Engineering Command an employer of choice" [18]. Annual updates since that time have reflected the Department of the Navy Strategic Plan. The following focus areas and goals are taken from the May 1993 Annual Update [18].

Customer Focus
1. We will develop and implement methodologies to determine internal and external customer needs and expectations and share that information with all employees.

Products and Services
1. We will determine our future product and service lines through increased interaction with our customers.
2. We will improve products and services through continuous process improvement.

People

1. We will continue to encourage and support each person's involvement in the continuous improvement of his or her work processes fostering personal initiative and decisiveness.

2. We will continually improve the skills and capabilities of our work force, encourage team and self-development and provide opportunities for personal growth and career enhancement.

Business Practices

1. We will empower our people by delegating authority and responsibility closest to delivery points of our products and services.

2. We will implement innovative acquisition strategies which enhance our ability to support our customers and reduce the time for delivery of our products and services.

3. We will provide information support that is responsive to individual user requirements.

4. We will develop policies, procedures, and an organizational structure to implements our responsibilities in Base Realignment and Closure.

5. We will establish indicators and communications channels to properly evaluate the state of the Command.

5.3 Navy Public Works Mission

One facet of the Naval Facilities Engineering Command's responsibility is the operation and maintenance of a shore establishment which supports the Navy's operational requirements. This responsibility is carried out through Navy public works organizations. The mission of Navy public works organizations is twofold: service to the fleet, and optimization of service outputs with available resources. Duties include: facility planning and programming, real estate management, design and construction of new facilities, maintenance and repair of facilities,

improvement projects, utilities systems operations and maintenance, facility disposal, energy conservation and management, transportation equipment operations and maintenance, environmental management, and property management in family housing [19].

5.4 Navy Public Works Center Operation and Organization

In geographic areas with a large concentration of Naval installations, public works services are generally provided by a Public Works Center (PWC). "A PWC is a large, independent command whose mission is to provide public works and facilities support to ashore and afloat commands within its geographical area" [19]. "Headed by an independent Commanding Officer, the PWC acts as a service provider, performing the full range of public works functions for each 'customer' (activity)" [19].

"PWC's are manned largely by a Federal Civil Service work force. PWC's located overseas also hire foreign national employees. Usually with less that 15 military officers, the PWC's range in size from 600 to 3,900 employees and have an annual volume of business varying from $30,000,000 to over $250,000,000" [19].

A PWC receives a one-time appropriation of operating capital, then "bills" each customer for services rendered to reimburse the fund. In this way, a PWC operates similarly to a private sector firm. "Each customer buys only those services required and pays only for the services received" [19]. As with any service organization, the primary goal is satisfactory customer service.

Each PWC operates under unique conditions, so each is organized slightly differently. However, PWC's are usually organized functionally into three distinct groups: planning, production, and support. A typical organization is shown in Figure 5.1. The primary tasks for the planning group are inspection and facilities planning to correct deficiencies and meet future requirements. The production

group is responsible for translating customer requests into specific work plans and cost estimates, and executing those plan when funded by the customer. In addition to administrative and civilian personnel functions, the support group is responsible for financial management and long range business planning, manpower analysis, and efficiency programs [19].

PWC's also have personnel, called Activity Civil Engineers (ACE), who are usually the most junior military officers and who serve as part-time facilities managers for those customers who are not large enough to have full time managers. Again, the use of these personnel varies from one organization to another. In some cases, the ACE's are in the field with the customer, in others they are located in the production area or in a customer service office [19].
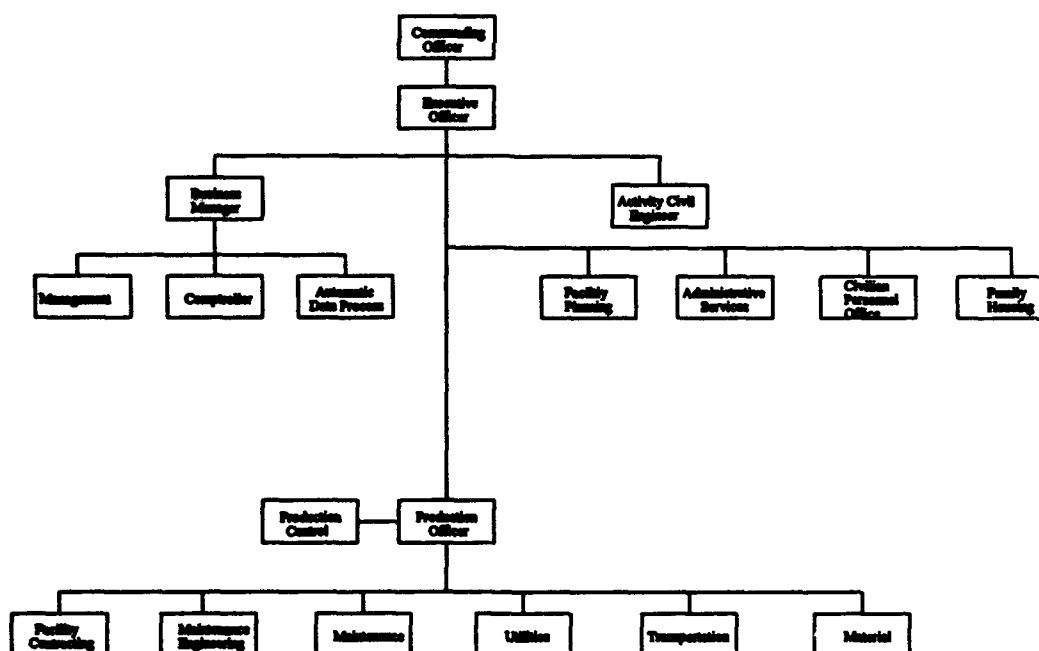
Figure 5.1 Typical Public Works Center Organization

Some PWC's have implemented a "Company" concept in response to customer requests for more responsive, personal service. These companies are designed around the needs and workload of the customer. They operate independently of the PWC drawing support only when absolutely necessary. Final makeup of the company depends upon the type of work they are to be assigned, as well as the size and workload of the whole PWC [19].

Chapter 6. Deployment of Total Quality Management in Navy Public Works Centers

6.1 Introduction

In previous chapters, public sector productivity improvement initiatives have been discussed in general terms and the Total Quality Management (TQM) philosophy has been discussed in more specific terms. In this chapter, application of TQM principles to Navy Public Works Centers (PWC's) to improve productivity will be discussed.

6.2 Underlying Assumptions and Focus

It is the responsibility of Naval leadership to create high performance systems that support the Department of the Navy's Mission Statement. A high performance system is "a comprehensive, customer-driven system that aligns all of the activities in an organization with the common focus on customer satisfaction through continuous improvement in the quality of goods and services" [29]. So then, it is the leader's job to determine organizational goals and to foster the development of a culture which encourages improvement. He can do this by using the principles of TQM and managing "the five aspects of organizational life -- purpose, objectives, strategy, structure, and culture" [16].

Because the executive leadership of the Naval Facilities Engineering Command has successfully promulgated the purpose, objectives, and strategies that the Navy Civil Engineer Corps is to use in creating high performance facilities service organizations, this chapter will concentrate on the structure and culture of these organizations.

6.3 Service Structure

The salient question to be asked in determining the structure for an organization is: What organization is most convenient for the customer and the work force [1]? The answer, in general terms, is the combination of a technical system which allows employees to be most productive and a social organization which will bring human resources to bear on that technology [2]. It is usually a flattened structure that will allow workers to perform a large variety of tasks with high mobility between jobs [29]. It abandons the traditional approach of responsibility fragmentation that drains the enterprise and commitment from employees and replaces is with employee ownership. It gives people the authority to make decisions that effect their work, makes it possible for workers to take initiative, decreases stress, fuels cooperation, and creates interest and a feeling of belonging in the workplace [13]. In their work, Frederick C. and John M. Dyer [7] call this type of organization a "customer-centered" organization.

In considering the most appropriate organizational structure for delivering public works services, the key features of a customer-centered organization seem appropriate. They are:

- the original purpose and main mission are still the same and still recognized by all,
- oriented towards giving service to outsiders, looks to customer for approbation,
- reacts primarily to external stimulation ... goes into action when the customer comes, and relates all its action to his needs,
- routines and assignments of personnel are flexible and readily varied to provide immediate service to outsiders,
- members are glad to see customers.

This type of organization also conveys a sense of connectedness, uniqueness, and power to each employee that creates a positive work environment [13].

Within this organization, the leader has two very important tasks: 1) to design a group of individual jobs to be done, and 2) to create a hierarchy of goals that support the main mission.

The design of his job plays the most significant role in the quality of work life an employee experiences. When a leader thinks of individual positions for his organization, there are two major sets of job components that he must consider, structural components, and human components which will be discussed later [17].

There are four elements in the set of structural components: organizational structure, job structure, work structure, and physical environment. Organizational structure determines how employees relate to each other and to management. It is demonstrated by supervisory style, the amount and type of communication present within the organization, the amount of authority employees are delegated, and the extent to which teams and participative management are used. Job structure relates to the actual duties and responsibilities that a person holding the job will be responsible for accomplishing. Work structure defines when and where the employee will work, and what standard measures will be used for output quality. The physical environment is concerned with workplace layout, acoustics, esthetics, safety, and recreation [17]. A well-designed job combines these elements to create a position that imparts ownership, responsibility, authority to think, and accountability for results to the worker [13].

There are two special cases that a leader should keep in mind when designing jobs in a service organization. The first is the role of the middle manager. Traditionally a reflection of prevailing organization culture, middle managers may feel threatened and without purpose in a flattened organization. Special care should be taken to convey to them their new broader role in the organization. Once relegated to a supervisory role with approval/disapproval authority, middle managers in a customer-centered organization become free to widen their perspective, to become more business focused, and to serve the

organization on a higher level. If supported and motivated by senior management, middle managers can become the harbinger of customer orientation [1].

The second case is the person who suffers emotional labor, or whose "job situation puts him in one-to-one contact" on a constant and repeated basis with many "people who are often in various states of distress" [1]. Work in which the employee's feelings and empathy are in some way the tools of his trade can leave the employee feeling tense, tired, overloaded, and eventually, jaded. These feelings are symptoms of contact-overload syndrome and "can effect both the worker and the customer in a very direct way" [1]. Leaders should account for this situation and build in a relief mechanism when designing these important positions.

Each job that a leader creates must have individual goals and those goals must be integrated with the goals of the work group and the organization. Creation of goals is discussed in Sections 6.8 and 6.9.

6.4 Application to a Public Works Center Service Company

The PWC Company concept provides fertile ground for implementation of TQM principles. Given the support personnel and authority required, each Company would be responsible for servicing a group of customers and their associated facilities.

6.5 Public Works Center Service Company Structure and Responsibility

The area for which each Navy PWC is responsible is divided into zones, as is now done, and each zone is managed by an independent PWC Company. The Company should provide all of the services required by its group of customers and serve as each customer's facility staff. It should act independently from the PWC as much as possible, but when additional resources are needed, the PWC and PWC Company should use a consultant-type relationship.

Each Company's zone should include a set of customers and their associated facilities up to a plant value of approximately two hundred million dollars. The number of customers in each zone will differ because customers differ in size, services demanded, and type and complexity of facilities operated. It is important, however, that all of a customer's facilities be serviced by the same Company.

Each Company should be staffed by a Facilities Manager and/or an Activity Civil Engineer and support personnel whose services are tailored to meet the needs of the zone. Typically, the support staff should include an engineering technician, a work management staff, budget and accounting personnel, procurement personnel, and clerical support. The Facilities Manager should be the customers' single point of contact. He and his staff liaison with craftsmen, suppliers, specialists, and the PWC to organize resources and solve problems to meet the customers' needs [1]. The number and trades of craftsmen who form the balance of Company personnel should be selected based upon the type of services required by the customers in the zone, as is now done.

A Company should be responsible for work planning, material procurement, work execution, and follow-up. Procurement personnel must have the procurement authority necessary to expediently supply their craftsmen with the materials and supplies they need. This task would be facilitated by the small, focused Company organization. Craftsmen and procurement personnel would share a common purpose and information with each other. They would work together to obtain quickly the correct materials for each job. Procurement personnel should use the experience and preference of the craftsman who will do the work when selecting materials to be purchased.

The same idea applies to work management. Company personnel would be able to focus on one customer group, so they could become extremely familiar with the customers' facilities as well as their concerns. This understanding would facilitate maintenance planning and work scheduling. Together, the work

management staff and the craftsmen would agree on who is going to do what. Then the craftsmen would be authorized to plan and evaluate their own work. This would not only motivate the craftsmen but also allow the work management staff to get away from the details and concentrate on planning [13].

The facilities manager should be assigned a reasonable number of customers with whom he can establish long-term relationships that will facilitate long-range facilities planning. The facilities manager then becomes, in effect, an integral part of each customer's organization. He and his team are able to prepare project documentation, assist with hazardous waste disposal issues, provide counsel and input for reports to higher authorities, and provide a myriad of other services. The idea is to take the facilities maintenance personnel out of the reactionary mode that drains budgets and spirits, and put them into a proactive mode where their talent and experience can be of real use to their customers.

6.6 Information Flow Within a Public Works Center Service Company

The 1979 baseline survey of federal employee attitudes revealed a need for improvement within federal organizations [35]. Federal workers reported "a distrust of the organization, feelings of being uninformed, and a skepticism about whether the organization can change for the better." They also indicated that through "they have adequate control over their work activities, ... they feel that their influence on decision-making is rather low." More effective communication techniques can be used by leaders to help alleviate these feelings.

A leader must first convey the vision, values and mission of the organization to all members of the organization. He may wish "to hold open meetings ... in which [he] summarize[s] the vision, mission and values, and invite dialogue," or he may take the one-text approach and involve "the entire work force in the formation and articulation of the organization's vision, values and mission" [32].

Management can use routine staff meetings more advantageously by using them to regularly focus on issues concerning work force involvement. All managers should be "urged to give accurate and full reports to subordinates on major issues covered and decisions made" in high-level staff meetings and then "post in a prominent place the agenda and minutes of the meetings" [32]. They should also encourage the use of crew-level meetings to facilitate understanding and the flow of information between team members on specific jobs [28]. As people become accustomed to working more closely, work methods committees and quality circles can begin to meet to share information at the grass roots level [28].

Newsletters "identifying people who have made useful quality improvement suggestions, highlighting team successes, and informing everyone of key employee involvement events" are a good way to deliver a constant message [32]. These newsletters are an especially good forum for the leader to deliver his message to the entire work force at once.

"Periodic meetings with everyone in the organization permit the top leadership to share first hand, major new developments, provide a dialogue with staff, and particularly to allow for sharing among staff significant quality and employee accomplishments" [32].

Lastly, leaders should consider the advantages computer networks have in linking work stations and providing an organizational knowledge reservoir.

6.7 Information Sharing with Other Organizations

Management should always be open to information from novel sources. They should be aware of what similar organization are doings and imagine how their innovations could be transplanted or stolen with pride [14]. Managers should understand data collection techniques and be able to collect information through

organizational questionnaires and interviews "to determine perceptions of craftsmen to productivity," motivation, or change [28].

6.8 Productivity Improvement Indicators

The United States Office of Personnel Management defines productivity as: "a) increasing efficiency, b) increasing the usefulness and effectiveness of governmental services and products, c) increasing the responsiveness of services to public need, d) decreasing the cost of services, and e) decreasing the time required to provide the services" [39]. The government has been interested in productivity since the late 19th century, and now several executive agencies are actively involved in the many facets of productivity including increasing awareness of the importance of productivity, increasing the quality of work life for federal workers, providing incentives, and measuring employee attitude, job satisfaction, and effectiveness. In all, 46 agencies report productivity data to the Bureau of Labor Statistics for compilation and analysis [17]. But even with all of the attention focused on productivity, its measurement is still difficult. Simple measures of productivity overlook the elements of service, quality, customer satisfaction, and employee job satisfaction [17].

So, we must be satisfied to measure the factors that seem to indicate productivity improvement. In Productivity in Public Organizations, Marc Holzer asserts that there are five catalysts to productivity improvement: productivity bargaining, capital investment, awareness of innovation, management audits, and principles of management [12].

First, "approximately 60% of all Federal employees are in exclusive bargaining units" and so leaders are "obligated to deal with the unions on all matters related to conditions of employment" [39]. Fortunately, "40% of current federal labor agreements provide for some type of labor-management committee" which will "provide a non-adversarial forum for discussions on improving productivity and quality of work life" [39]. Federal managers should cultivate

relationships within this forum and encourage union acceptance of strategies that will meet organizational objectives.

The Unites States Office of Personnel Management provides a list of ten activities which may improve the relationships federal managers have with their local union representatives. This list of activities was developed to facilitate implementation of a gain sharing program, but it seems appropriate for introducing productivity improvements as well [38]. The activities are:

1. Get the union involved from the start or shortly after the plan draft is developed.
2. Make sure that management is honest and has an above-board attitude with the union.
3. Clarify that gain sharing will remain separate from union issues (grievances, negotiations).
4. Make sure that the union has a formal position in the decision-making structure.
5. Prepare a memo of understanding and ensure that both union and management representatives sign it.
6. Provide thorough and complete education sessions for top union officials.
7. Provide the opportunity to have a say in plan development decisions.
8. Arrange meetings with higher union officials if they desire.
9. Arrange joint visits to locations that have gain sharing plans in place, if possible.
10. Try a 90-day termination clause if necessary.

Capital investment increases efficiency and shows up in the long run as costs savings [12]. In the PWC Company, the most logical places for capital investment are in machinery and tools that make jobs quicker and more safe, in communication and computer equipment that allow people to share information, and in education and training for the employees that improve skills [12].

Awareness of innovation is as important in performance measurement as it is in striving for continuous improvement because individual performance

measurement may be the most basic component of organizational productivity. The premise of performance measurement is to measure desirable behavior. Craftsmen are inherently motivated to do a good job [28], but "to motivate workers to the greatest extent possible, to encourage legendary performance, the leader measures workers' performance so that they can see whether they are achieving the desired results" [13]. Measuring makes setting records possible and is tremendously motivating [13]. Employee performance appraisals are discussed in more detail in Section 6.9.

Management audits are used to measure the effectiveness of management, its range of concern, efficiency, and economy [12]. Though management audits are usually perceived as an inquisition, they can be helpful when targeted at assistance rather than inspection. Open to every source of information, managers should seek out the advice of auditors to: develop systems that allow the organization to determine the degree to which services and products please customers, ease access, increase reliability and responsiveness, isolate problems and solutions, and cut down on waste and cycle time [29].

The Merit Systems Protection Board surveyed federal employees (GS13-15) and asked them what factors lead to improved productivity [27]. The factors they noted are listed below and are discussed throughout this paper.

1. Clarifying applicable laws and regulations.
2. Clarifying organizational mission, methods, or approach.
3. Changes in organizational structure or reporting relationships.
4. Delegating more authority or decision-making to lower levels.
5. Changes in the way work is organized.
6. Improved methods or procedures for doing work.
7. Use of better tools, technology, or information systems.
8. Selection of more appropriately qualified employees.
9. Selection of more appropriately qualified supervisors.
10. More attention to work planning and performance review.
11. Stronger financial incentives for "good" performance.
12. More attention to correction of "poor" performance.

13. More use of employee suggestions and input.
14. More use of employee involvement and teamwork.
15. Improved labor-management relations.
16. General improvement in organizational climate and attitudes.

6.9 Role of the Civil Engineer Corps Officer

The role of the Civil Engineer Corps (CEC) Officer in any public works position is to provide leadership, to create within the organization a passion for its purpose. Leaders keep the mission alive on a daily basis. In order to do this, there are three basic principles that a leader, dedicated to TQM, should abide by [29]:

- focus on achieving customer satisfaction,
- seek continuous and long term improvement in all of the organization's processes and outputs, and
- take steps to ensure the full involvement of the entire work force in improving quality.

Using these principles, a CEC officer assigned to a PWC executes his five major duties: to provide value-added management, to reinforce organizational values, to plan strategically, to focus on results, and to encourage union acceptance, as discussed in Section 6.7.

Value-added management assists everyone in the organization to align their energies and target them on the priorities of the business. It removes obstacles to cooperation and teamwork, and preaches the organizational philosophy. Value-added management ensures that resources are carefully invested in the development of people [1].

Leaders reinforce organizational values through daily example. Paying attention to what matters most, working diligently, knowing the facts, and holding people accountable builds a system based on values rather than on authority. It encourages pride, morale, and commitment so that people do things because they are right, not because they were told to do so [13].

Strategic planning is development of a long term strategy to bring about an organizational cultural that encourages pursuit of excellence, promotes innovation and risk taking, and empowers employees to participate actively to improve work processes [29]. A leader should ensure that every member of the organization has an opportunity to participate in developing and activating the plan. A strategic plan should be a goal-oriented document that details the step-by-step actions and milestones required to meet the goals.

Leaders should concentrate on the results that satisfy the strategic plan action items and motivate the work force to do the same thing. He or she should specifically define the results he is interested and turn them over to teams of workers who can work together to plan a cohesive strategy for delivering the results [13].

Chapter 5 described the Activity Civil Engineer (ACE) position. While in this assignment, a military young officer becomes oriented to military life and to the operation of Navy public works. He provides liaison with a group of PWC customers but controls no resources. The only tool available to him is the personal influence he may be able to generate. But because officers are young and seem to come and go very quickly, it is difficult for them to generate this type of influence within a well-established organization. Those who serve as an ACE often become disillusioned or even disgruntled with the arrangement. They end up feeling like the system's scapegoat because they hear their customer's needs but cannot mobilize to meet those needs.

Using the PWC Company concept to create hotbeds for leadership development could dramatically change this situation. By assigning the ACE to a PWC Company, he gains practical public works experience and provides the customers with a representative who has the resources needed to meet their needs. Whether assigned to work with an experienced civilian facilities manager or assigned to lead a PWC Company, the officer will bring fresh ideas and enthusiasm

to the organization. In return, he will have the opportunity to develop management and leadership skills that he will use for the rest of his life.

6.10 Human Solutions

Up to this point, the structural components of organizational positions have been discussed. The focus will now turn to the human factors that determine quality of work life. Selection and placement, training and development, and motivation are factors in determining the effectiveness of employees [17]. Selection and payment procedures in the federal sector involve merit selection standards, job assignments according to skill level, and equal employment opportunity requirements. Training and development could include on-the-job training, planned rotation, upward mobility, career counseling, and merit promotion standards. Motivation, in addition to what is built into the work itself, comes in the form of compensation, fringe benefits, recognition awards, incentive systems, and positive reinforcement [17].

Selection, payment, and management of federal civil service personnel is governed by federal law. The Intergovernmental Personnel Act [17] provides the following framework for managers:

1. Recruiting, selecting, and advancing employees on the basis of their relative ability, knowledge, and skills including open consideration of qualified applicants for initial appointment.
2. Providing equitable and adequate compensation.
3. Training employees as needed to assure high-quality performance.
4. Retraining employees on the basis of the adequacy of their performance, correcting inadequate performance, and separating employees whose inadequate performance cannot be corrected.
5. Assuring fair treatment of applicants and employees in all aspects of personnel administration without regard to political affiliation, race, color, national origin, sex or religious creed and with proper regard for their privacy and constitutional rights as citizens.
6. Assuring that employees are protected against coercion for partisan political purposes and are prohibited form using their official authority

for the purpose of interfering with or affecting the result of an election or nomination for office.

Within these guidelines, however, managers have latitude in setting job requirements and determining the skill level of the individual needed to fill a particular job. Matching the skill level with job requirement is an important step in getting a satisfactory hire [30]. The findings of a 1979 survey of federal employees found that they are "quite satisfied with the work they are doing" which support the use of this framework [35].

The same survey also found mixed attitudes toward supervisors and performance appraisals.

Most Federal workers express generally positive attitudes toward their supervisors, particularly regarding their supervisors' technical competence, administrative, and interpersonal skill. Nonetheless, many employees feel that their supervisors do not set clear goals for them and do not encourage them to participate in decision-making.

Attitudes concerning performance appraisals are similarly mixed. On the one hand, a majority of workers think performance appraisals cover the most important parts of their jobs, are conducted in a timely manner and are discussed between supervisor and employee. A majority also feel they understand the performance appraisal system. On the other hand, employees fault the accuracy on the ratings they receive as well as their utility in assessing individual strengths and weaknesses, establishing training plans, or otherwise improving performance. Further, most employs would like to get more frequent feedback from their supervisors than they presently receive.

The findings of this study indicate that workers desire the type of feedback delivered under TQM. First, supervisors and managers, in a joint effort with each employee, should create performance evaluation criteria that is oriented towards

specific measurable results. Including desired results both here and in the job description, helps people understand what their individual goals are and so help them operate more effectively [13]. Each employee's evaluation criteria should also "minimize the competitive effects of individual appraisals and maximize the potential of team/group appraisals to motivate the collaborative behavior necessary for effective team performance" [32]. Supervisory personnel should periodically review each employee's performance with him in a formal setting during the review period. He should also provide spontaneous feedback and encourage employees to recognize each others good work.

6.11 Public Works Center Company Personnel Training

An effective training program is one of the basic tenets of TQM. Training gives employees the skills they need to be good decision makers. Both new and existing employees who are trained for a job, learn the job more quickly and become more productive in a shorter period of time [2]. Organizations that emphasize the importance of learning help their employees grow. By learning to deal with both successes and setbacks, discovering how to draw conclusions from experience and how to generalize the conclusions beyond that experience, employees gain confidence and are motivated to try new ideas [13]. Unfortunately, most governmental organizations devote less than one percent of their budget to training while the private sector spends three to five times that much [31]. A PWC Company should strive to meet the private sector standard through an ongoing commitment to training for all employees.

Using input from every level of the organization, the PWC Company Facility Manager should develop an annual training plan. The training plan should be balanced to meet the needs of individual employees, to ensure compliance with operational certification requirements, and to support the growth of an organizational culture.

All Company training courses should be targeted towards their specific audience and "geared to how adults learn" [31]. Training, in general, should:

- be experimental in nature. It should stress practical application exercises for participants, including role playing and dealing with real life case studies.
- be participative and interactive to the extent possible. Instructors serve to facilitate the learning process but are not the source of all knowledge.
- be non-threatening. The purpose is to facilitate learning that the student is assumed to actively desire and seek.

Training plan elements should be concentrated in the areas of occupational proficiency and certification, safety, interpersonal communication, teamwork, problem solving, and data collection and analysis. Training in TQM orientation, awareness, and skills should match the developmental stage of the Company. Most Navy employees have received orientation and awareness training, so the plan should account for "just-in-time" training on quality tools and techniques that will be needed as groups tackle work process problems [31].

TQM subjects that the Company training plan should also address are: new employee orientation, leadership and management, planning and problem solving, group dynamics, and customer focus. New employee orientation should bring a new employee up to speed on the Company and how it does business. It should include an introduction on how the Company views the "role of leadership, [work] measurement and analysis, employee empowerment, rewards and recognition, teamwork, and customer focus" [31]. The training should impart an understanding of the Company culture to the new employee.

Leadership and management training exposes participants to topics like "how to build and sustain trust and mutual respect, coaching and mentoring, encouraging risk-taking, openness, delegation and empowerment, listening skills,

systems thinking, and how to promote organization change while also understanding and handling resistance to change" [31].

Planning and problem solving courses teach the students specific techniques. They may include group problem solving techniques like brainstorming, nominal group technique, and multi-voting, or statistical analysis tools that employees may use to identify process problems or analyze customer feedback. These courses could also include the Seven Management and Planning Tools, Hoshin Planning and Quality Function Deployment [31].

Group dynamics training is about teamwork. It helps workers at all levels understand how groups can take on a personality of their own, how to work effectively in a group setting, and how to reach group decisions through consensus. It builds interpersonal and communication skills and teaches respect for differences in perspective and point-of-view [31].

Training on customer focus helps employees learn to identify their customers, both internal and external, and to determine their needs. It "is designed to enhance employees' understanding of their products and services, who receives them (the customer), what they think is important to the customer, and development of measures to know how well they are doing in meeting those customer needs" [31].

Selecting trainers is a difficult and critical part of developing the Company training plan. Professional trainers may be necessary for some courses, but the bulk of the training expertise should be developed from talent within the Company. Whether in occupational or in TQM skills, training is more effective when the instructors is "tied to operations of the organization" both because the instructor can relate training specifically to daily routine and because the training can be tailored towards the organization [31]. In-house efforts also tend to be more cost effective and flexible.

The Company should not only reassign employees from mission-related jobs to develop in-house expertise but should also rely on line employees to provide some training as a collateral duty. Again, this brings credibility to the instruction. It also engages a larger number of people in the training process. Usually, these employees gain a very good understanding and appreciation of the TQM process. Their intimate involvement is motivating for them personally, and when they return to their workplace, they are very influential in involving their peers [31].

6.12 Recognition and Incentives

Recognition is an extremely important part of the TQM philosophy. When they unleash the power of participative decision-making, managers are in effect recognizing their employees as thinking people with ideas [28]. This recognition alone goes a long way in reducing the "small cog in a big wheel syndrome" and in encouraging employees to work hard [28]. Recognition liberally and sincerely applied, especially in the federal sector, would have incredible effects on the organizational culture.

McDermott, Mikulak, and Beauregard [15] provide the following tips for developing a recognition system:

1. Recognize the idea maker for each and every idea.
2. Do not differentiate recognition based on the potential (economic) value of the idea; recognize all ideas equally.
3. Recognize the idea manager, even if the idea manager and the idea maker are the same person.
4. Don't forget to recognize the idea installer(s) and the idea coach.
5. Set up recognition approaches as win-win, not win-lose; don't create a competition among people to groups for recognition. Competition between people creates losers.
6. Instead of competition between groups, set organization wide milestones to shoot for.

7. Keep the recognition-system dynamic. Change it over time to re-energize the employee driven idea system to keep up with the changing needs of the work force.
8. Include a peer-recognition component in the recognition methodology. Set boundaries of freedom for the peer recognition committee; don't dictate its approach.
9. Always include face-to-face as part of the recognition scheme.

The federal government has many incentive rewards programs, from gain sharing to rewards for paperwork reduction to rewards for assistance in filling a hard-to-fill position [36]. While these programs have become standard fare in the federal sector, there is a danger in using them. For example, deciding who will receive what reward steals administrative time and energy. What happens if someone is forgotten? Linking ideas to prizes instills a quid pro quo attitude in employees. They begin to jealously guard their ideas and opportunities for teamwork are gone. It is also doubtful that management can devise prizes that delight their recipient forever. Soon, employees will become disenchanted and stop trying [15].

If it is determined that rewards are needed, management should follow some guidelines in developing the program. Managers should involve employees from all levels of the organization in developing a program that will support the goals of the organization and encourage teamwork. The objectives of the program, the types of contributions to be rewarded, eligibility criteria, and type of reward should all be clearly defined [37].

6.13 Why a Public Works Center Service Company Would Work

PWC Company performance will improve if the whole organization is focused on delivering quality to the customer in the "moment of truth" - that "episode in which the customer comes into contact with any aspect of the organization and gets an impression of the quality of its service" [1]. In the context of organizational values, team members are given the authority to think

[13], and to make decisions that further organizational goals and will be supported by management [29]. They work together to produce up front quality by being familiar with their work areas, by making timely purchases of the correct material required for each job, and by applying the best practices rather than end-product inspection. Close relationships with their customers provides non-threatening feedback and process design input. It also provides an environment in which restraints can be explained and are accepted, and then provides a forum conducive to generation of alternatives [29].

When delivering planning and maintenance services, organizations that are relatively small and built around the principles of TQM, will be more productive and effective. In these smaller, tightly focused groups, people find it easier to create a mission and a vision with meanings that they feel are worthy and can buy into. They find that responsibility and authority inspires group commitment to a common set of values. Sharing a value system negates the need for rigid standard operating procedures and sets group members free to make decisions and deliver the services the best way they know how. As trust grows, interpersonal and territorial barriers crumble and are replaced with teamwork. Teamwork leads not only to system improvement and development of responsive, customer-oriented processes but also to personal satisfaction for each team member [13]. Personal satisfaction and a winning team attitude feeds the organization as it continually improves.

Chapter 7. Key Conclusions and Recommendations

7.1 Key Conclusions

The preceding literature review has outlined the development of productivity improvement initiatives in the United States Federal Government with special emphasis on the development of the Total Quality Management (TQM) philosophy within the Department of the Navy. It defined TQM and described an organizational structure and culture that typified the philosophy. It also described the strategies developed by the Department of the Navy's Naval Facilities Engineering Command to obtain a structure and culture based on TQM. Lastly, this paper presented specific management actions that the Naval Facilities Engineering Command could use to deploy their strategy in Navy Public Works Centers (PWC's).

The preceding literature review has yielded several conclusions:

First, application of TQM principles has brought increased global competitiveness to private and public enterprises throughout the world. By all indications, the executive leaders of the United States have chosen to implement these same techniques to provide better service, improve employee morale and the quality of its programs, and to reduce costs in the federal government.

TQM offers great promise as a management method because it is based upon the natural tendencies of workers. It capitalizes on the job factors that intrinsically motivate and minimizes the job factors that do not motivate. TQM also utilizes group behavior to create an organizational culture that values innovation and high standards of quality.

Navy PWC's offer an exceptionally good opportunity for application of TQM because they operate so much like a private sector business.

Lastly, application of TQM in Navy PWC's using PWC Companies would improve customer interface and strategic thinking. It would provide a more rewarding work environment for PWC employees and officers, and the cost to provide facilities maintenance service would be reduced through improved productivity, and better management of materials and fiscal resources.

7.2 Recommendations

The preceding pages were meant to show, in a very specific way, how the principles of TQM can be applied within a governmental organization. They focus on creating an organizational structure and culture that empowers employees and brings the wealth of their experience and knowledge into the decision-making process. Specific recommendations for Navy implementation include:

1. De-centralize the support staff personnel at Navy PWC's, including the Activity Civil Engineers, and place them in the field with PWC Companies supporting a specific group of customers.

2. Formalize integrated work teams within each PWC Company that can work on internal process improvement, facilitate intra-organizational communication and information sharing, and provide a forum for training.

3. Increase funding and provide employee training in all areas including: occupational proficiency and certification, safety, interpersonal communication, teamwork, problem solving, data collection and analysis, and quality tools, initially targeting the private sector benchmark, 3-5% of operating budget.

4. Emphasize information and data sharing through employee meetings, newsletters, and computer networks.

5. With the input of each employee, create individual job descriptions and performance evaluations that describe desired results. Provide regular feedback on how well each employee is meeting his goals.

6. Use sincere recognition as the basis for an incentive program designed to encourage employee participation and reward teamwork.

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